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## Smoke without Fire: Reconstructing the Candelero

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# Smoke without Fire: Reconstructing the Candelero

**Jacob Griffith-Rosenberger; Advisors: Edward Schortman, PhD., Patricia Urban, PhD.**

## Introduction

Candeleros are ceramic artifacts produced in ancient Mesoamerica that contain circular chambers, often with vents. They are found primarily at Teotihuacan and in southeast Mesoamerica at Copan and at sites in northwest Honduras with styles varying widely by region. Due to evidence of burning and sooting in chambers, they are thought to be incense burners.

The collection of candeleros studied here comes from the Naco and lower Cacaupala valleys of northwest Honduras and dates to the Late (600-800 CE) and Terminal Classic (800-1000 CE). These artifacts vary from 4-10cm in diameter or larger with bigger examples having more chambers. Most are 3-5.2cm in height and their chambers average 3.2cm deep and 1.7cm in diameter (see Figs. 1-3).

Little research has been done on candeleros and most focuses on description and typology. This project represents the only experimental attempt to follow the life of candeleros from production to use. It was hypothesized that fingers and sticks of some kind were easily used to create the chambers and that charcoal was used in the chambers to smoke copal resin.

## Methods

Mica Red Low Fire clay from New Mexico was tempered with sand and volcanic ash to approximate the clay originally used to make candeleros. The amounts and materials used were based on visual analysis and chemical tests of ancient candeleros, test disks of tempered clay, and a literature review.

This clay was used to create replica candeleros based on the collection (see Fig. 4). Dowels of various sizes and PVC pipe were used to imitate tools employed to create chambers. These replicas were fired in a modern kiln at a low firing temperature (500°C), with a short soak time (1 hour), and oxidizing atmosphere to approximate original firing conditions.

The replica candeleros were described using a process analogous to the one used for artifacts. These and three ancient examples were then used in tests in which copal resin was smoked with wood charcoal, pine fatwood, or duraflame® stix™ Multi-use Firestarters. Pictures, videos, and written notes were used for recordkeeping.

## Acknowledgements

I am grateful to Kenyon College, especially the Summer Science Scholars Program and Anthropology Department, for making this research possible. I would particularly like to thank Pat and Ed for encouraging me to pursue archaeology and anthropology and guiding me throughout this project. A special thanks also to Robin Nordmoe for her essential lessons on clay, ceramics, and pottery, and to Bruce Hardy for his help.

## How were candeleros manufactured and utilized in the ancient Naco and lower Cacaupala valleys?

### Candeleros

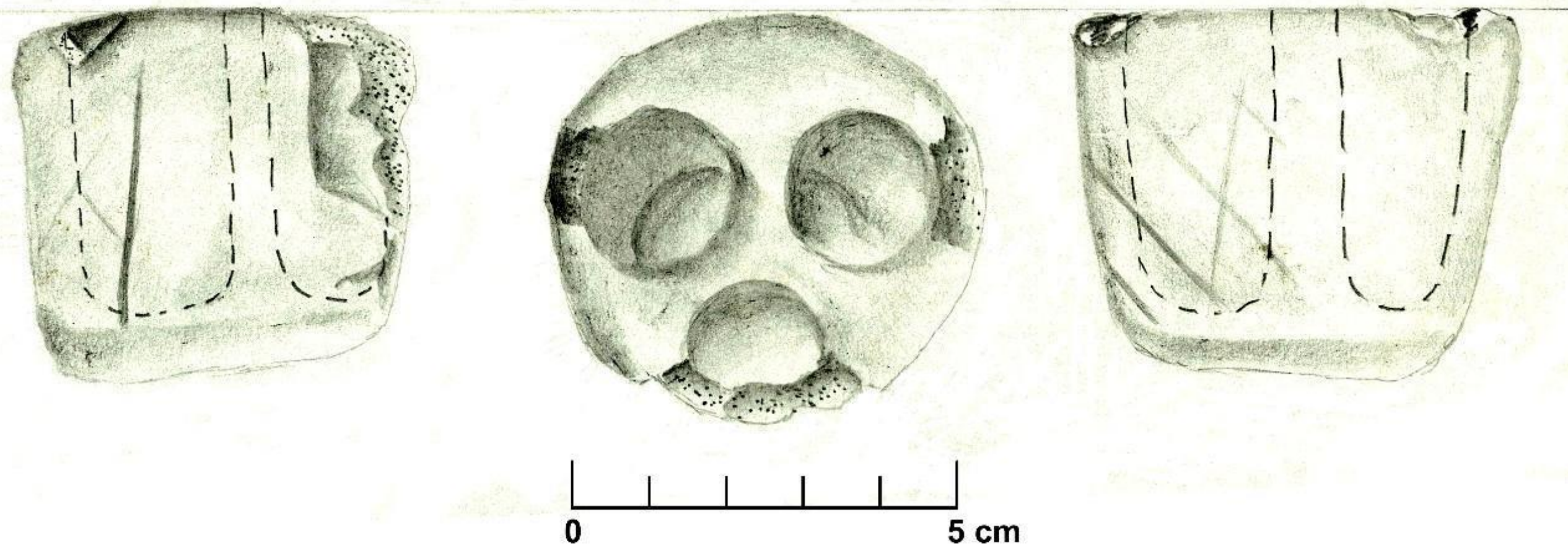


Figure 1: Example of a candelero with 3 chambers.

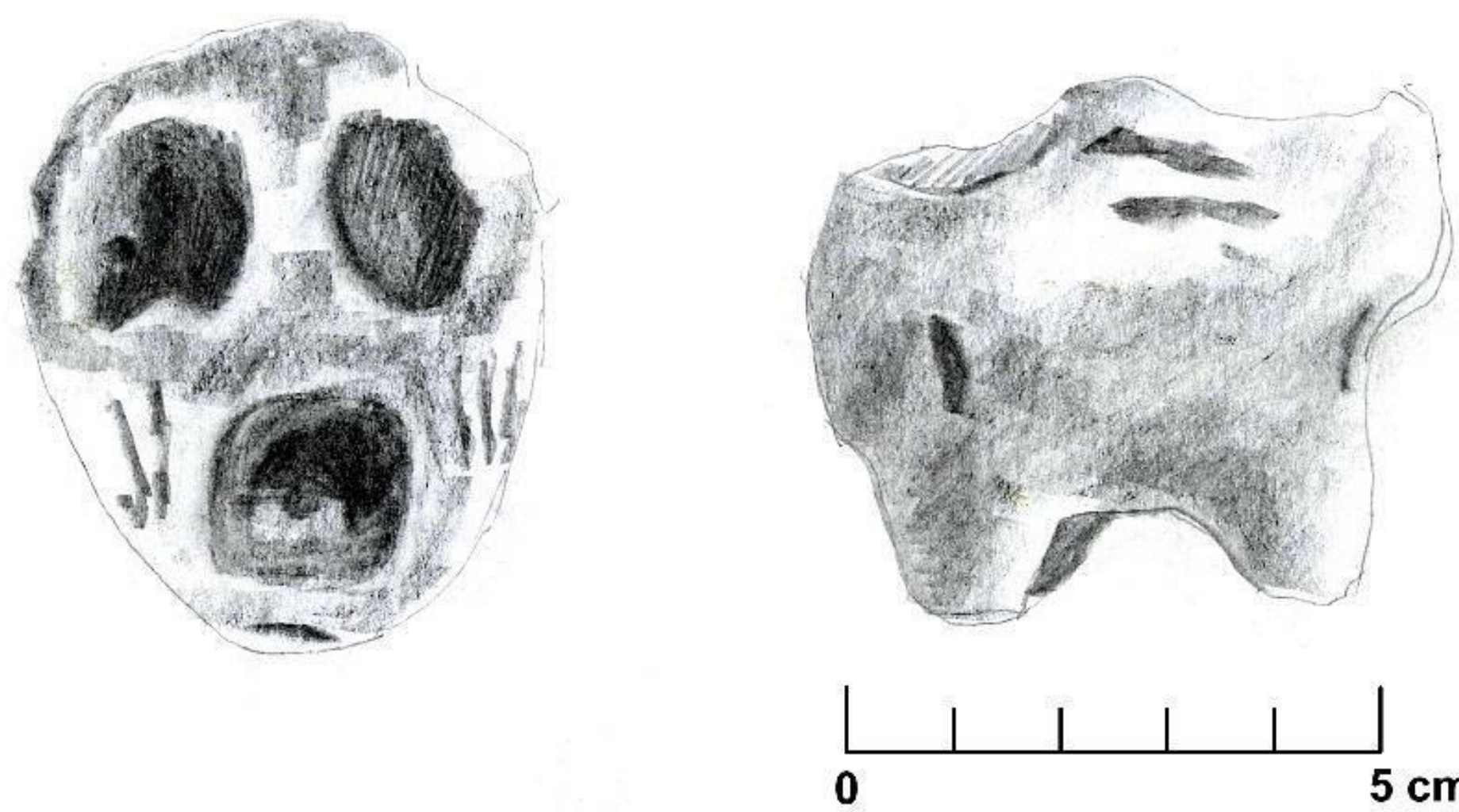


Figure 2: Example of a screaming monkey candelero with nubbin feet.

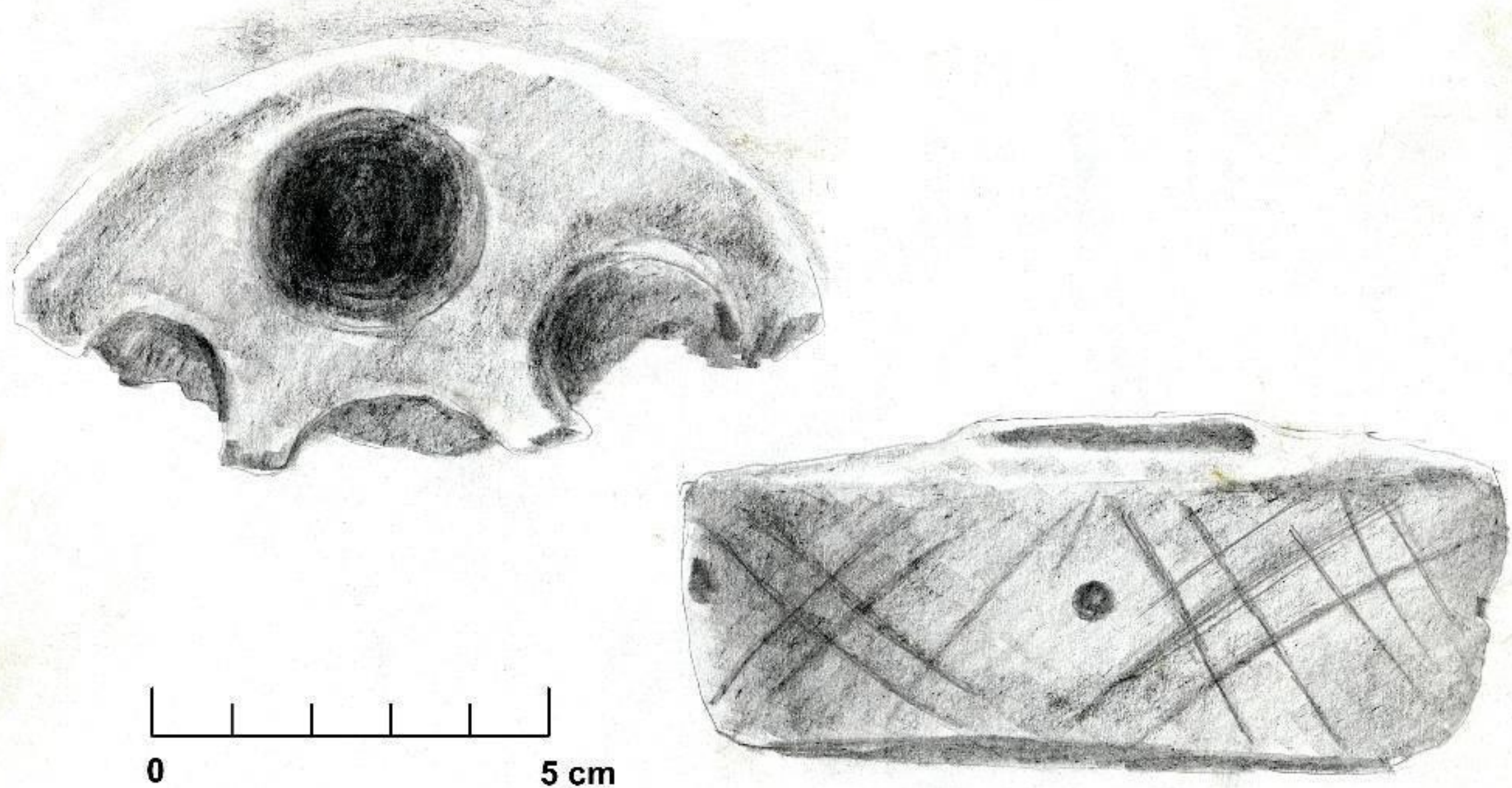


Figure 3: Example of a candelero with vents and cross-hatching incision.

### Experimental Candeleros



Figure 4: Replica candeleros.

## Results

- No limestone or calcite was identified in the candelero pastes tested.
- Candelero pastes have high mica content.
- Sand is the primary temper for candeleros.
- Pastes of artifacts closely resemble those of fired replicas with 30% or more very coarse sand and volcanic ash temper.
- Candelero production requires very moist and plastic clay.
- Production can take a lone, unskilled potter 30-60 minutes per candelero, depending on the complexity.
- For small candeleros (1-4 chambers), fingers alone can be used to create the chambers.
- For larger candeleros (>4 holes), solid or hollow cylindrical tools are necessary to create the chambers.
- Thin-walled candeleros and nubbin feet are the most difficult features to make.
- Copal resin smokes best when exposed to high heat, but not a flame.
- Charcoal, fatwood, and firestarter all went out in chambers due to poor oxygen flow.

## Conclusions and Discussion

Candelero manufacturing is not simple and easy. It is more complicated than forcing fingers into a ball of clay and requires potting skill and familiarity with candelero design. Notably, the thin walls and nubbin feet seen in some artifacts were not successfully replicated here. Very regular solid or hollow cylindrical tools were clearly used in production, especially for larger candeleros.

The burning tests carried out were largely inconclusive, as the fuel was not effective in the chambers. Burning patterns on replicas and the attributes of copal resin do suggest that something smoldering is the proper fuel.

This project is part of a growing body of recent research on candeleros and more needs to be done. Petrographic and chemical analyses of candelero pastes are necessary for more accurate replicative experiments. Resin and carbon assays are the next steps in determining what was burned in candeleros and how. Finally, further attempts to replicate the more challenging features of candeleros should be undertaken by a skilled potter.

## Bibliography

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